

### **Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application:

#### **Listing of Claims:**

Claims 1-23 (canceled)

Claim 24 (currently amended) A method of classifying a biological specimens, said method comprising the steps of:

(a) screening each of a plurality of test specimens for a first known condition using determining whether fluorescence spectral data from a said test specimen illuminated with substantially monochromatic radiation is determinate of said test specimen having a first known condition, said test specimen comprising cervical tissue; and

(b) for at least one of said plurality of test specimens for which said screening step is not determinate of said test specimen having said first known condition if said fluorescence spectral data is not determinate of said test specimen having said first known condition:

(i) processing reflectance spectral data from said test specimen using reference reflectance spectral data; and

(ii) classifying said test specimen based at least in part on said processed reflectance spectral data.

Claim 25 (canceled)

Claim 26 (previously presented) The method of claim 24, wherein said first known condition is a known state of health.

Claim 27 (previously presented) The method of claim 26, wherein said known state of health comprises one of the conditions of normal squamous tissue, metaplasia, CIN I, CIN II, CIN III, and CIN II/III.

Claim 28 (previously presented) The method of claim 24, wherein said reference reflectance spectral data comprises an average amplitude for each of a plurality of wavelengths.

Claim 29 (previously presented) The method of claim 28, wherein said processing comprises determining a residual amplitude at each of said plurality of wavelengths.

Claim 30 (previously presented) The method of claim 29, wherein determining said residual amplitude at each of said plurality of wavelengths comprises subtracting an average amplitude of said reference reflectance spectral data from an amplitude of said reflectance spectral data of said test specimen.

Claim 31 (previously presented) The method of claim 30, wherein step (b) comprises comparing said residual amplitude at each of said plurality of wavelengths to one or more sets of reference residual reflectance spectral data.

Claim 32 (previously presented) The method of claim 24, wherein step (b) comprises obtaining additional optical information from said test specimen and evaluating said additional optical information with said fluorescence spectral data and said reflectance spectral data from said test specimen to classify said test specimen.

Claim 33 (previously presented) The method of claim 32, wherein said additional optical information comprises video information.

Claim 34 (previously presented) The method of claim 32, wherein said additional optical information comprises an optical image.

Claim 35 (canceled)

Claim 36 (previously presented) The method of claim 24, wherein step (b)(ii) comprises classifying said test specimen as having a known state of health.

Claim 37 (previously presented) The method of claim 36, wherein said known state of health comprises one of the conditions of normal squamous tissue, metaplasia, CIN I, CIN II, CIN III, and CIN II/III.

Claim 38 (currently amended) A system for classifying a biological specimens, said system comprising:

a data collection module adapted for obtaining reflectance spectral data from each of a plurality of a test specimens comprising cervical tissue; and

a computation module adapted for:

screening each of said plurality of test specimens for a first known condition  
using ~~determining whether~~ fluorescence spectral data from said test specimen illuminated with substantially monochromatic radiation ~~is determinate of said test specimen having a first known condition~~; and

for at least one of said plurality of test specimens for which said screening  
~~response to determining that said fluorescence spectral data from said test specimen is~~  
not determinate of said test specimen having said first known condition, processing said reflectance spectral data of said test specimen using reference reflectance spectral data, and classifying said test specimen~~cervical tissue~~ based at least in part on said processed reflectance spectral data.

Claim 39 (canceled)

Claim 40 (previously presented) The system of claim 38, wherein said first known condition is a known state of health.

Claim 41 (previously presented) The system of claim 40, wherein said known state of health comprises one of the conditions of normal squamous tissue, metaplasia, CIN I, CIN II, CIN III, and CIN II/III.

Claim 42 (previously presented) The system of claim 38, wherein said data collection module obtains additional optical information from each of said test specimens, and said computation

module evaluates said additional optical information with said fluorescence spectral data and said reflectance spectral data from said at least one test specimen in said classifying of said test specimen.

Claim 43 (previously presented) The system of claim 42, wherein said additional optical information comprises video information.

Claim 44 (previously presented) The system of claim 42, wherein said additional optical information comprises an optical image.

Claim 45 (canceled)

Claim 46 (previously presented) The system of claim 38, wherein said classifying step comprises classifying said test specimen as having a known state of health.

Claim 47 (previously presented) The system of claim 46, wherein said known state of health comprises one of the conditions of normal squamous tissue, metaplasia, CIN I, CIN II, CIN III, and CIN II/III.

Claim 48 (canceled)

Claim 49 (currently amended) The method of claim 24, wherein step (a) comprises screening each of said test specimens for normal squamous tissue and metaplasia using said fluorescence spectral data.

Claim 50 (previously presented) The method of claim 49, wherein step (b) comprises using said reflectance spectral data to determine whether said test specimen is indicative of CIN I, CIN II, CIN III, or CIN II/III in the event said fluorescence spectral data is not determinate.

Claim 51 (currently amended) The method of claim 24, wherein each of said test specimens are ~~is~~ *in vivo*.

Claim 52 (previously presented) The method of claim 24, wherein step (b) comprises classifying said test specimen based at least in part on said processed reflectance spectral data and said fluorescence spectral data.